

HOW TO LEARN FROM A MATH BOOK

Reading a math book is different from reading other types of books and reading a *math textbook* is different from the traditional way students are taught to read textbooks in general. Here are some tips on how to learn math from your math textbook.

1. **Slow down!** The flow of a math book is not like the flow of a novel. A novel should be read fluently, but math books cannot. If you are reading a novel and are somewhat distracted, you can still get the idea of the story. When you are not concentrating on math, you will get very little out of it, and it will seem more difficult than it really is.
2. **Every word counts.** Math books are usually not repetitive, so there is little chance of picking up missed information from reading on. Writers of math texts believe that extra words and repeats get in the way of clarity. Never start in the middle of the book, the chapter, or the page. Each page assumes you have mastered the previous pages.
3. **Understand each sentence before you go on.** Reread as many times as necessary for you to master an idea. Mastery can take minutes, hours, or days.
Remember: Reading a math textbook is very difficult. It might take you half an hour to read and understand just one page.
4. **Do not skim diagrams and other kinds of illustrative material.** Consider them as a part of the written text and stick with them until you thoroughly understand their content.
5. Words and symbols of math have very specific meanings. **If you are at all uncertain about the meaning of a term look it up,** or ask someone to explain it. Keep a list of these new vocabulary words and new symbols for easy review.
6. **Write as you read!**
 - a. Work out proofs, derivations, and sample problems. Rewrite each proof and derivation in your own words. Fill in all steps to clarify your complete understanding of the math. Later on, when you go back and review, the steps are already filled in, and you will continue to understand how each step was completed.
 - b. As you come to each example in the text, try to work the example as a kind of pretest of the concept. Do not fret if you cannot work the example at this time. Once you have tried the example on your own, read the example.
 - c. After reading an example, cover it up and try to work it out yourself. Continue rewriting and working the example until you can do it without the aid of the text.
 - d. Write key recall words in the margins.
 - e. Mark formulas, definitions, cautionary notes (with an asterisk, check mark, etc.) in a way that is consistent and in a workable style. Do not overuse marking of the text.
 - f. Note any questions on concepts or procedures you need to have clarified.

7. **Create a resource or “cheat” sheet** by recording key points on a separate piece of paper or into a notebook. Make use of index cards, concept sheets, math diaries, etc. to record formulas, algorithms, theorems, important derivations, mathematical terms and symbols, and relevant examples.
8. **Use more than one math book.** Use these other math books as reference texts to clarify or better explain a topic you are studying. Pick books that appeal to you. If you are very verbal, a book with long explanations is likely to be most helpful. If you are very visual, you might choose a book that has more illustrations.
9. **Read the chapter before, and again, after class.** You will get the most out of class if you have read the material before the instructor presents it. Even if you felt you understood the material in class, read the chapter over, soon after class. This second reading will help you store the information you’ve learned in your long term memory.
10. **What should you do if while reading the text you get to a point where you *cannot* understand the material?**
 - a. Go back to the previous page and reread the information to maintain a train of thought.
 - b. Read ahead to the next page to discover if any additional information better explains the misunderstood material.
 - c. Locate and review any diagrams, examples, or rules that explain the misunderstood material.
 - d. Read the misunderstood paragraph several times *aloud* to better understand its meaning.
 - e. Refer to your math notes for a different explanation of the misunderstood material.
 - f. Refer to another math textbook, website, or DVD that expands the explanation of the misunderstood material.
 - g. Define exactly what you do not understand and call a study buddy for help.
 - h. Prepare questions for your instructor on the confusing information and contact your math tutor or math instructor for help in understanding the material. Prepare yourself to ask those questions at the next class meeting.

SOURCES:

Cynthia Arem: *Conquering Math Anxiety*
Brooks Cole Publishing Company, Pacific, CA.
(February 2009)



Paul D. Nolting: *Winning at Math: Your Guide to Learning Mathematics*
Academic Success Press
(June 1997)